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Growing West European Dependence on Natural Gas From the USSR

An Intelligence Assessment

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ER 80-10462
August 1980

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An Intelligence Assessment

Research for this report was completed on 31 July 1980.

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This paper was written by
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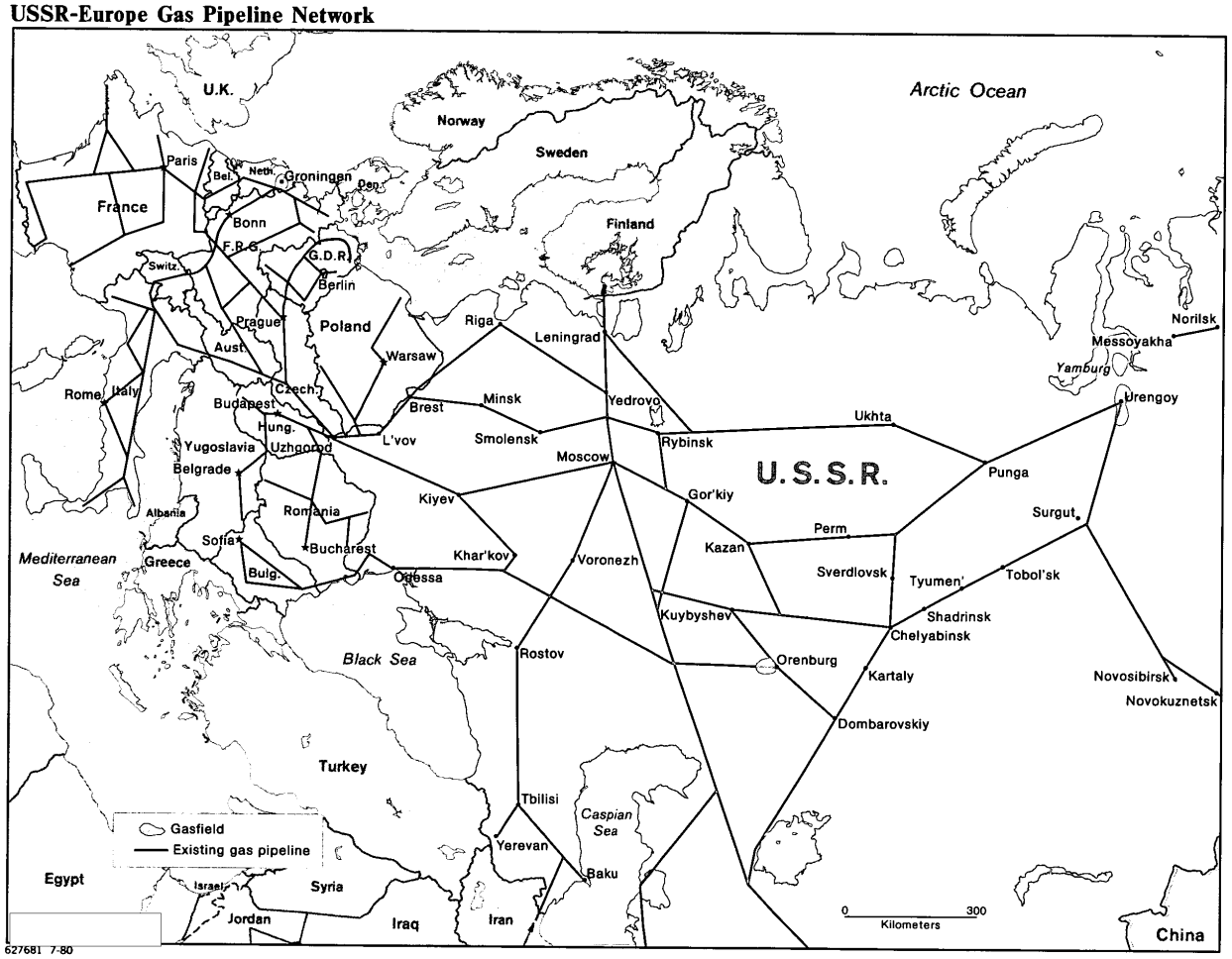
USSR-Europe Gas Pipeline Network



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Growing West European Dependence on Natural Gas From the USSR

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Key Judgments

Moscow is planning to build a major gas export pipeline to Western Europe that will be the biggest East-West project ever undertaken and a financial bonanza for the USSR. If the gas is priced at the equivalent of current crude oil prices, annual earnings from the new line of $8 billion would pay off the project investment in a year or two. By the late 1980s, income from Soviet gas deliveries to the West will be worth 1 million b/d of crude oil, assuming oil-gas price parity.

The USSR will have to buy nearly all the pipe, compressors, and valves for the pipeline from the West at a cost of about $6 billion. Most of this amount is expected to be financed by Western government guaranteed credits at concessionary terms.

Moscow's West European partners in the project will get several billion dollars in orders for pipeline equipment, a needed boost in employment, and relatively stable long-term gas supplies. But their heightened dependence on Soviet gas will increase Moscow's leverage on them and reduce their flexibility in dealing with the USSR.

Given the scale and technical complexity of the proposed pipeline and the fact that negotiations with the West on equipment contracts, credits, and gas prices will be difficult, we do not believe the pipeline will be ready before the late 1980s.

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Growing West European Dependence on Natural Gas From the USSR

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Plans are now under way to build a large-diameter, high-capacity gas export pipeline from West Siberia to Western Europe that would be the biggest East-West project ever undertaken. The deal will be a financial bonanza for the USSR. With the new line's shipments of 3.9 billion cubic feet per day (cf/d), total Soviet gas exports to the West by 1990 will be 6.4 billion cf/d, the energy equivalent of 1 million b/d of oil. If the gas is priced at the equivalent of *current* crude oil prices, annual earnings from the new line would be $8 billion—enough to pay off the project investment in a year or two. Moreover, Moscow's costs will be reduced by the concessionary export credit terms the West will offer to support Soviet equipment purchases.

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Moscow's West European partners will get several billion dollars in orders for pipe compressors and other equipment for the pipeline, as well as a needed boost in employment in these industries. In addition to this, the West Europeans will have the advantage of relatively stable gas supplies. But their heightened dependence on Soviet gas will increase Moscow's leverage on them and reduce their flexibility in dealing with the USSR.

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The prospective participants hope to have the project completed and fully operational by the mid-1980s. There are several major technical decisions to be made, however, and the scale and technical complexity of the effort will require a long construction period. Moreover, negotiations with the West on equipment contracts, credits, and gas prices will be long and difficult. Although a mid-1980s startup is technically feasible, we do not believe the pipeline will be ready before the late 1980s. Meeting the mid-1980s target would reflect a sense of urgency on both sides, and require uncharacteristic speed by Moscow during contract negotiations and equipment procurement.

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State of Play

The project was first broached by the Soviets in 1978

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The Soviets moved slowly at first, but discussions have intensified since the beginning of 1980. Although the heightened activity this year probably indicates progress in planning the new pipeline, the timing and level of publicity also reflect Moscow's efforts to undermine Western economic sanctions by dangling a major new project before its major Western trade partners.

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According to the Soviet Gas Ministry, the pipeline's completion is a major objective of the 11th Five-Year Plan (1981-85). Deputy Chairman Gvishiani of the State Committee for Science and Technology has pushed hard for the project. West German Chancellor Schmidt and Brezhnev agreed at the Moscow summit that West German firms and Soviet organizations could open preliminary negotiations on the project, although negotiations had been under way for several months. The summit declaration may constitute formal Soviet approval of the project. A new round of talks began in late July when a Soviet trade delegation, led by Deputy Foreign Trade Minister Osipov, visited West Germany, Italy, and France.

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The Undertaking

The project calls for building a large-diameter, high-capacity gas export pipeline from West Siberia to Western Europe. Many technical questions are not yet decided, including the pipeline's route, operating pressure, system capacity, and size of the compressor units to be used. In any case, the pipeline will push the state of the art to new levels. Not only will it be the longest single gas pipeline ever laid—4,400 kilometers—but at 4.8 billion cf/d it would have the greatest capacity of any ever built. By comparison, the 2,700-kilometer Orenburg pipeline to Eastern Europe has about half the capacity and compressor stations.

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The Gas Supply

The USSR is the world's second largest gas producer at 42 billion cf/d and has abundant gas reserves in West Siberia. At least six fields there are known to be supergiants, that is, with reserves in excess of 35 trillion cubic feet each. The two most likely candidates for the head section of the pipeline are the Urengoy and Yamburg fields. Urengoy is probably the world's

largest gasfield, with reserves of some 250 trillion cubic feet. Production should hit 5.8 billion cf/d this year and by 1982-83 is scheduled to reach 15.5 billion cf/d—more than the combined production of the Netherlands and Canada last year. Because large-scale development of the Urengoy field is already under way, it would be the easiest field to tap for this project. The Yamburg field, 400 kilometers to the north, also has been mentioned as a possible source of supply for the gas pipeline.

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Yamburg gas is earmarked for export. Tapping the undeveloped Yamburg field will be difficult and expensive because of a total lack of infrastructure, more complex permafrost conditions, and a greater distance to markets. It would be easier to expand production at Urengoy by the amount needed for the new pipeline.

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The location of the western terminus of the proposed pipeline is also uncertain. The most likely location would be Brest on the Polish-Soviet border. Under this variant, the pipeline might serve Warsaw and Berlin on its way to West Germany, where it would tie in to the West European gas net. A more southerly route through Czechoslovakia is also under consideration, exiting the Soviet Union at Uzhgorod and paralleling existing export lines. The Soviets may be weighing the relative gas needs of the East European countries before making a final route determination. The East European countries through which the pipeline passes reportedly will receive about 1 billion cf/d of the pipeline's throughput as a transit fee.

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Technical Factors

To achieve the desired throughput capacity of 4.8 billion cf/d the pipeline will have to operate at higher pressures than is normal, even in the West. Most Soviet large-diameter pipelines operate at 55 to 75 atmospheres (805 to 1,100 psi) and Western pipelines are only now moving to a pressure of about 100 atmospheres (1,460 psi). The new line calls for a working pressure of 100 to 115 atmospheres (1,460 to 1,680 psi), requiring thicker walled pipe and more powerful compressor stations. Moreover, the gas will have to be cooled where the pipeline crosses permafrost areas both to prevent frost heave, which could rupture the pipeline, and to prevent melting the surrounding permafrost areas. The Soviets are now building an experimental chilled gas pipeline, but nothing on the scale of the proposed pipeline has ever been tried before.

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Equipment Imports and Credit Needs

Since the USSR does not produce the high-strength, large-diameter pipe or the powerful compressor stations that will be used on the pipeline, it will have to buy nearly all the equipment for the pipeline from Western suppliers. This includes 3.5-4.0 million tons of pipe, 220 ball valve units, and 200 gas turbines.

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Although Moscow has approached most major suppliers of pipeline equipment for this project, the West Germans have taken the lead in recent negotiations. Mannesmann is bidding to be the major pipe and equipment supplier. A West German press report indicates that the firm also wants to be the general manager for the project and even to take a substantial role in supervising the construction. Deutsche Bank is putting together a syndicate of banks to finance the deal.

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Western companies are eager to supply Moscow's pipe needs for the new line and have ample capacity to do so. The Soviets could have more difficulty lining up compressor suppliers. Moscow may have to turn to US firms, which are the world leaders in compressor design.

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. Three 25-megawatt (MW) (33,000 horsepower) gas turbines will be needed at each of the 41 compressor stations along the line. About 80 turbine compressor units of 10 MW capacity will be required in permafrost areas to cool the gas to 0° Celsius. The total compressor power needed for this project (4,000 to 5,000 MW) will equal about one-third of the entire compressor power the Soviets plan to install in 1981-85.

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We estimate the hard currency equipment costs at $6 billion: $3 billion for compressors, $2 billion for pipe, and another $1 billion for valves, construction equipment, and other items. This total is roughly one-half the $11-13 billion estimate generally quoted for the

cost of the entire project. The higher amount includes construction costs that will consist mainly of Soviet ruble expenditures. 25X1

One press report accords Mannesmann a substantial role in the management of the project, but we doubt the Soviets would agree to this. A more probable arrangement would be to use Polish labor and supplies.

If Poland or any other East European country participates in the new pipeline, they probably will want some of the natural gas. 25X1

Both the Soviets and Western bankers are insisting on Western government guaranteed credits for the project. Based on the hard currency equipment cost estimates above, the credit requirement would be $5 billion, which will come from countries in roughly the same proportion as equipment contracts. Deutsche Bank reportedly is already discussing financing arrangements with 20 West German banks and at least a dozen other European banks. Even this number of banks would have difficulty in raising all or most of the funds required without the help of Western government assistance. 25X1

Soviet Gas Exports On the Rise

The USSR exported about 4.5 billion cf/d of gas in 1979, second only to the Netherlands; about 45 percent went to Western Europe and the rest to Eastern Europe. Hard currency gas earnings totaled $1.4 billion. Shipments to the West are scheduled to rise about 30 percent in 1980, to nearly 2.6 billion cf/d. Deliveries to the West are based on eight compensation agreements that the USSR signed with Austria, France, Italy, and West Germany between 1968 and 1975. These agreements permitted the USSR to purchase about 9 million tons of large-diameter pipe and other gas-related equipment, financed by long-term, government-backed credits at low real interest rates. To repay these loans, the USSR agreed to long-term gas delivery contracts, some of which extend to 2000. 25X1

USSR: Gas Exports for Hard Currency (million cubic feet per day)

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	1979 [1]	1985 [2]	1990 [3]
West Germany	968	1,452	2,130
Italy	600	678	1,355
Austria	232	232	523
France	194	387	1,355
Belgium	0	0	581
Netherlands	0	0	484
Total	**1,994**	**2,749**	**6,428**

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[1] Estimated.
[2] Scheduled under current contracts, except those contracts under Iranian swap agreement are excluded.
[3] Projected assuming full deliveries under the new pipeline deal.

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Since 1975, the USSR has refused repeated requests by European countries for new long-term gas agreements. Discussion of the new pipeline signals a reversal of Soviet policy and probably reflects a need to lay the groundwork for large increases in hard currency gas sales to compensate for anticipated sharp declines in hard currency oil sales. The timing also coincides with the completion of the Orenburg project, which preempted considerable manpower and financial resources, and with the beginning of the new five-year planning period. 25X1

Other contracts that the Soviets signed in 1975 for a total of 1.1 billion cf/d to West Germany, France, and Austria by 1985 apparently are now void. The exports were tied to construction of a new pipeline in Iran (IGAT 2), which was to deliver 1.6 billion cf/d to the USSR. Construction of the Iranian pipeline was halted after the revolution, and prospects are slight that it will now be completed. 25X1

The new deal envisions exports to Western Europe of approximately 3.9 billion cf/d. If the 3.9 billion cf/d figure is agreed upon, the six countries slated to get gas under the pipeline deal would receive the following amounts (in billion cf/d):

West Germany	1.0
France	1.0
Italy	0.7
Belgium	0.6
Netherlands	0.5
Austria	0.3

Adding these deliveries to existing contracts—and assuming that the Iranian swap deal does not materialize—Soviet gas deliveries for hard currency in 1990 would reach 6.4 billion cf/d, compared with 2.0 billion cf/d in 1979, and only 0.7 billion cf/d as recently as 1975.

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The Soviets should reap a financial bonanza under the new gas deal. Gas prices are expected to soar in the 1980s as exporters seek to close the price gap between gas and liquid fuels. The average price of Soviet gas sold for hard currency in 1979 was equivalent to about $11 per barrel of crude oil or only about one-third the current oil price. The 1979 gas price was discounted so steeply from crude prices because of the lag built into Soviet gas pricing formulas. Gas prices in 1980 will rise sharply to reflect last year's runup in oil prices. By the time the deliveries through the line begin, most of the gap will have been closed. Moreover, gas earnings should be even greater because crude oil prices should be considerably higher. At the equivalent of current crude oil prices, the 3.9 billion cf/d of new gas exports would earn Moscow $8 billion a year in hard currency. The earnings would liquidate the hard currency cost for the project in a year or two, even with substantial allowances for inflation and cost overruns for equipment.

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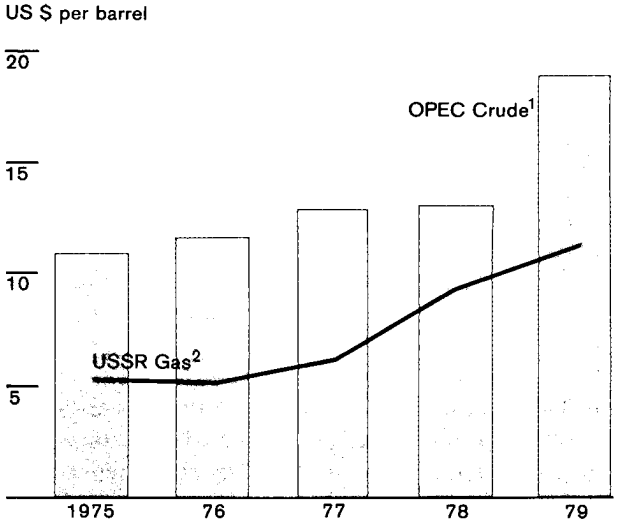
The extra gas earnings will go far toward offsetting the projected fall in oil exports in the 1980s. Oil sales of $9.6 billion accounted for nearly half of the USSR's 1979 hard currency earnings. Gas earnings should rise rapidly through the 1980s because of rapid price increases and some gains in volume under existing contracts. In part because of a decline

Comparison of Crude Oil and Natural Gas Prices



[1]F.O.B. official sales price.

[2]Cost at national border per barrel of oil equivalent.

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in oil exports, natural gas earnings should overtake oil revenues in the next several years. By the time the new gas project is completed and reaches full capacity—the late 1980s—total scheduled natural gas sales of 6.4 billion cf/d at the equivalent of $32 per barrel will earn $13 billion annually. Moreover, the gas revenues would make substantial oil purchases possible. Assuming oil-gas price parity, the income from gas deliveries will be worth 1 million b/d of crude.

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Western Europe and Soviet Gas Dependency

Western Europe depends on Soviet gas supplies for less than 10 percent of its needs. West European gas production, however, is not increasing as fast as consumption, and it is expected to peak by the mid-1980s because of the decline of the Groningen field in the Netherlands. This field currently supplies more than half of the EC's gas imports. Although increased North Sea production will offset this decline to some extent, gas supplies in Western

25X1 Europe will become exceedingly tight in the late 1980s.

The dependencies are higher for individual countries. Nearly 50 percent of Austrian gas supplies, for example, comes from the USSR. Soviet gas supplies are also important to Italy (25 percent), France (14 percent), and West Germany (16 percent). Moscow's leverage as a significant supplier of natural gas has made some countries reluctant to impose economic sanctions on the USSR because of Afghanistan. 25X1

The shipment of an additional 3.9 billion cf/d through the proposed new pipeline would raise the Soviet share of Western Europe's gas supplies to 20 percent by 1990. Dependency on Soviet gas in the six countries would reach nearly 30 percent by 1990 with a low of 13 percent for the Netherlands and a high of 72 percent for Austria. 25X1

Soviet Gas [1] Share of Consumption in Selected Countries Percent

	1980	1990 [2]
Austria	46	72
Belgium	0	40
France	14	33
Italy	25	31
Netherlands	0	13
West Germany	16	26

[1] Imports of Soviet gas as a percent of domestic gas consumption.
[2] Assumes capacity deliveries from the pipeline project. Gas consumption in 1990 based on individual country forecasts to the International Energy Agency. Does not include Soviet shipments under defunct swap arrangement with Iran.

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European Perceptions

The vulnerability of Western Europe to Soviet gas supply interruptions has become a cause for concern in various European capitals.

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While some Europeans worry about increased reliance on Soviet energy, the prevailing attitude seems to be one of acceptance. In terms of total primary energy supplies in Western Europe, Soviet gas makes up only 1.5 percent. With the new gas deal, the Soviet share would reach 3.5 percent by 1990. Moreover, alternative sources of gas supply are few—and in some cases believed to be less reliable. Recent events have placed in doubt several future sources of gas supplies. The trilateral deal with Iran is considered to be a dead issue—removing more than 1.1 billion cf/d from future gas supplies to Western Europe. The Algerians, disappointed with the resistance to their price demands, have stopped construction of the Arzew LNG facility that was to liquefy gas earmarked for West Germany, France, Sweden, Belgium, and the Netherlands. The energy policy in The Hague is directed at preserving domestic gas as a strategic reserve and is designed to extend the life of Dutch gas reserves as long as possible. 25X1

The Schedule for the Project

The timetable discussed in press articles about the project appears overly optimistic. The participants have stated that they expect construction to be completed by 1983 and the line to be fully operational by 1985-86. We believe that a more realistic schedule would not have the line operating at full capacity before the late 1980s. Planning is still in a preliminary stage, with many basic decisions yet to be made. The technical specifications, pipeline route, and construction arrangements are fundamental questions requiring Soviet decisions. While it seems certain that the project will receive Moscow's full approval, if it has not already, the unresolved questions will require wide coordination among several Soviet ministries. 25X1

Once the pipeline details are firmed up within the Soviet bureaucracy, specific negotiations with the Western firms can move ahead. Although both sides appear eager to see the deal through, the technical, commercial, and financial negotiations promise to be arduous and lengthy. The scale and technical complexity of the pipeline will require Western firms to surpass past achievements. The commercial negotiations could take years if past Soviet negotiating practices are repeated. The Soviets are notoriously tough and laborious bargainers, especially on big contracts. 25X1

A West European consortium of state-owned gas suppliers is being put together to arrange the large gas purchase. Firms expected to be involved include: OEMV (Austria), Gaz de France, Gusunie (Netherlands), Distrigaz (Belgium), ENI (Italy), and several West German firms—Ruhrgas, Thyssen Gas, Deutsche BP, and BEB, an oil and gas company owned jointly by Shell and Esso. These gas firms can expect a hard Soviet line in gas price negotiations. The Soviets already have hinted that they want a formula based on lighter grades of liquid fuels instead of the cheaper residual fuel oil to which most existing gas contracts are linked. 25X1

The West European governments will have to approve the project. The credit amounts required are too great for commercial banks to lend without the explicit backing of their governments. The current amount of West German guarantees, for example, is $4.9 billion; the gas project will require a substantial increase in commitments that will need legislative approval. Some of the likely equipment and steel suppliers are at least in part government owned. The governments generally favor the project, but bureaucratic delays in approval are possible. 25X1